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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/530,549	06/30/2000	ALBRECHT MAYER	P00.0665	8828

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EXAMINER	
GARCIA OTERO, EDUARDO	

ART UNIT	PAPER NUMBER
2123	8

DATE MAILED: 09/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

Office Action Summary	Application N .	Applicant(s)	
	09/530,549	MAYER, ALBRECHT	
	Examiner	Art Unit	
	Eduardo Garcia-Otero	2123	

-- The MAILING DATE of this c mmunication appears on the cover sheet with the c rrespondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *30 June 2003* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *1* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION: Non-Final (first action on the merits)

Introduction

1. Title is: METHOD AND DEVICE FOR SYSTEM SIMULATION OF MICROCONTROLLERS/MICROPROCESSORS AND CORRESPONDING PERIPHERAL MODLULES.

2. First named inventor is: MAYER.

3. Claims 7-12 have been submitted, examined, and rejected.

4. A first preliminary amendment (Amendment "A") cancelled claims 1-6, and added claims 7-12.

5. Said amendment is accepted without objection, it does not introduce new matter.

6. This Application is a 371 of PCT/DE99/02778 09/02/1999.

Index of Prior Art

7. **Bhandari** refers to US Patent 5,663,900.

Claim Rejections - 35 USC § 101-statutory subject matter

8. 35 U.S.C. 101 reads as follows: Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. **Claim 12 is rejected under 35 U.S.C. 101** because the claimed invention is directed to non-statutory subject matter.

10. Claim 12 states **"A system for carrying out a method... said method comprising the steps of: ... said system comprising: a microprocessor control unit..."**. This "system" is appears to be both "process" and "machine" (or apparatus) according to the statutory categories of 35 USC 101. Said "system" is not a statutory category. See MPEP 2173.05(p)(II), which states:

> A single claim which claims both an apparatus and the method steps of using the apparatus is indefinite under 35 U.S.C. 112, second paragraph. In Ex parte Lyell, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990), a claim directed to an automatic transmission workstand and the method steps of using it was held to be ambiguous and properly rejected under 35 U.S.C. 112, second paragraph.
> Such claims should also be rejected under 35 U.S.C. 101 based on the theory that the claim is directed to neither a "process" nor a "machine," but rather embraces or overlaps two different statutory classes of invention set forth in 35 U.S.C. 101 which is drafted so as to set forth the statutory classes of invention in the alternative only. Id. at 1551.

Claim Rejections - 35 USC § 112-Second Paragraph-indefinite claims

11. The following is a quotation of the second paragraph of 35 U.S.C. 112: The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. **Claims 7 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite** for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

13. Claim 7 has a term that is defined inconsistently in the specification. Specifically, the claim 7 term **"accelerated operational mode"** is defined as equivalent to "accelerated code execution" (see specification page 3 line 20), and is further defined as "simulated time does not elapse" at Specification page 3 line 17.

14. Note that the "simulated time does not elapse" definition at Specification page 3 line 17. "accelerated operational mode" appears contrary to Specification page 3 line 21 which states "only part of the system is simulated/executed... An example... and the rest of the system is not simulated". The second definition (Specification page 3 line 21) appears to imply that simulated time elapses for a part of the system, but not the rest of the system. Thus, the specification is inconsistent (and thus indefinite) with respect to simulated time.

15. Further, specification page 4 line 1 states "certain peripheral modules are also cosimulated purely functionally during the accelerated code execution", which also appears contrary to "simulated time does not elapse" at Specification page 3 line 17.

16. Thus, the claim 7 term "accelerated operational mode" is indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

17. Claim 12 is rejected for the same reasons as claim 7.

Claim Interpretation

18. **The claim language is interpreted in light of the specification.** Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns,* 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

19. Claim 7 states "sequence of steps", and "signal patterns", and "markers", and "accelerated operational mode".

20. **"Sequence of steps"** is interpreted as "sequence of code".

21. **"Signal patterns"** is interpreted as including "sequences of code".

22. **"Markers"** is interpreted as "code or sequences of code that are not usually used in program code".

23. **"Accelerated operational mode"** is interpreted as equivalent to "accelerated code execution", and is interpreted as "simulated time does not elapse", see Specification page 3 line 17.

24. Note that the above Examiner's interpretation for "accelerated operational mode" appears contrary to page 3 line 21 which states "only part of the system is simulated/executed... An example... and the rest of the system is not simulated", which appears to imply that simulated time elapses for a part of the system, but not the rest of the system.

25. Further, specification page 4 line 1 states "certain peripheral modules are also cosimulated purely functionally during the accelerated code execution", which appears contrary to "simulated time does not elapse" at Specification page 3 line 17.

26. If the simulated time elapses for a part of the system (but not the rest of system), then this limitation would be disclosed by asynchronous simulation as disclosed by Bhandari at column 4 line 21 "asynchronous operation".

27. Claim 12 states **"A system for carrying out a method... said method comprising the steps of:... said system comprising: a microprocessor control unit..."**. This "system" is interpreted as a "machine" according to the statutory classes of 35 USC 101. The "method" steps are interpreted as merely intended use, and are not given patentable weight. 35 USC 101 states "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent". See MPEP 2173.05(p)(II).

35 USC § 102: filed after 11/29/00, or vol. pub. under 35 USD 122(b)

28. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action: A person shall be entitled to a patent unless – (e) the invention was described in- (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published

under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

29. Claims 7-12 are rejected under 35 U.S.C. 102(e).

30. Claim 7 is rejected under 35 U.S.C. 102(e) as being anticipated by Bhandari.

31. Claim 7 is an independent claim with 5 limitations, labeled A-E by the Examiner for clarity.

32. A-**in a first sequence of steps, simulating said microcontroller/microprocessor and said peripheral modules with predetermined signal patterns** is disclosed by Bhandari at Abstract "various models are simulated and interfaced to certain target systems, logic analyzers, modeler, functional testers, emulators, hardware accelerators, hardware modelers, or other simulators". More specifically, "first sequence of steps" is disclosed at column 2 line 8 "software program is used to control simulation operations", and "microcontroller/microprocessor" is disclosed by "integrated circuits" at column 1 line 16, and "peripheral modules" is disclosed at column 1 line 62 "external systems may include other simulators... which may cooperate functionally with the primary simulation facility".

33. B-**said first sequence of steps having markers inserted therein** is disclosed by Bhandari at column 2 line 7 "software program... single step... interrupt".

34. C-**in a second sequence of steps, interrogating and evaluating states of said system brought about by said simulation** is disclosed by Bhandari column 1 line 33 "generate verifiable, imitated functional or logical output signals in response to stimuli applied to the model", and column 2 line 7 "software program... monitor". Note that Bhandari "verifiable" implies verifying by interrogating and evaluating the output signals of the model to verify the functional or logical behavior of the model. Further note that Bhandari "software program... monitor" also implies verifying by interrogating and evaluating the output signals.

35. D-**interrupting first sequence of steps for executing said second sequence of steps as dictated by said markers inserted into said first sequence** is disclosed by Bhandari at column 2 line 9 "single step" or "interrupt".

36. E-**said second sequence of steps being executed in an accelerated operational mode that is adapted to said evaluation** is disclosed by Bnandari at column 2 line 7 "software program is used to control simulation operation... single step, monitor, or interrupt". Note that single step and interrupt will each freeze the simulated time after executing the single step or interrupt. Thus, simulated time does not elapse during monitoring or analysis, after executing single step or interrupt. Note specification page 3 line 17 states "in the accelerated code mode [or accelerated operational mode] "simulated" time does not elapse". Also see Bhandari at column 4 line 21 regarding "asynchronous operation".

37. Claim 8 is rejected under 35 U.S.C. 102(e) as being anticipated by Bhandari.

38. Claim 8 depends from claim 7, with one additional limitation.

39. **"said first sequence of steps provides a clock-cycle-based simulation of said microcontroller/microprocessor and of said peripheral modules"** is disclosed by Bhandari at column 4 line 13 "second simulation tool may be synchronized with the primary simulator".

40. Claim 9 is rejected under 35 U.S.C. 102(e) as being anticipated by Bhandari.

41. Claim 9 depends from claim 7, with one additional limitation.

42. **"said first sequence of steps is a series of consecutive program codes"** is disclosed by Bhandari at column 2 line 7 "software program is used to control simulation operations".

43. Claim 10 is rejected under 35 U.S.C. 102(e) as being anticipated by Bhandari.

44. Claim 10 depends from claim 9, with one additional limitation.

45. **"markers are formed by one of opcodes or opcode sequences that are not usually used in said program code"** is disclosed by Bhandari at column 2 line 7 "software program is used to control simulation operations... single–step... or interrupt".

46. Claim 11 is rejected under 35 U.S.C. 102(e) as being anticipated by Bhandari.

47. Claim 11 depends from claim 7, with one additional limitation.

48. **"peripheral modules that were specified during said second sequence of steps are functionally cosimulated"** is disclosed by Bhandari at column 1 line 62 "external systems may include other simulators... which may cooperate functionally with the primary simulation facility", and at column 4 line 13 "synchronized".

49. Claim 12 is rejected under 35 U.S.C. 102(e) as being anticipated by Bhandari.

50. Claim 12 is an independent "system" claim with one limitation. This "system" is interpreted as a "machine" according to the statutory classes of 35 USC 101. The "method" steps are interpreted as merely intended use, and are not given patentable weight. 35 USC 101 states "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent". See MPEP 2173.05(p)(II).

51. **"a microprocessor control unit for simulating a module by generating signal patterns with an essentially precise clock cycle and for interrogating and evaluating states of said module that are brought about by said simulation during a program interrupt by activating an instruction set simulator"** is disclosed by Bhandari at Abstract "an electronic design automation (EDA) system".

Additional Cited Prior Art

52. The following US patents or publications are hereby cited as prior art, but have not been used for rejection. Applicant should review these carefully before responding to this office action.

53. Hirtle US Patent 4,031,517 discloses "interrupts caused by either external peripheral devices or processor simulated external devices through the use of a microroutine contained within the processor's read only memory", at column 1 line 37.

54. Chang US Patent 6,047,387 discloses "software simulation module, a peripheral device integrated circuit and..." at column 2 line 44.

55. Steinman US Patent 6,324,495 discloses "useful interactive capabilities are to issue commands from the outside world (which schedules events within the parallel simulation, and to synchronize external modules dynamically" at column 3 line 63.

Conclusion

56. All claims are rejected. Note that Bhandari could also serve as 102(a) type prior art.

Communication

57. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eduardo Garcia-Otero whose telephone number is 703-305-0857. The examiner can normally be reached on Monday through Thursday from 9:00 AM to 7:00 PM.

58. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kevin Teska, can be reached at (703) 305-9704. The fax phone numbers for this group are:

59. (703) 746-7238 --- for communications after a Final Rejection has been made;

60. (703) 746-7239 --- for other official communications; and

61. (703) 746-7240 --- for non-official or draft communications.

62. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist, whose telephone number is (703) 305-3900.

* * * *